REMARKS

Applicant respectfully requests reexamination and/or reconsideration of the claims.

The Office Action

Claims 1-17 stand rejected under 35 U.S.C. §102(e) as being anticipated anticipated by Ryan, Jr., et al. (U.S. Patent No. 6,244,727, hereinafter simply referred to as Ryan).

Claims 1-5 and **7-17** stand rejected under 35 U.S.C. §102(e) as being anticipated by Begemann, et al. (U.S. Patent No. 6,250,744, hereinafter simply referred to as Begemann).

Claims 1-5 and **7-17** stand rejected under 35 U.S.C. §102(b) as being anticipated by Mouyard, et al. (U.S. Patent No. 4,345,308, hereinafter simply referred to as Mouyard) or Handschy, et al. (U.S. Patent No. 6,038,005, hereinafter simply referred to as Handschy).

Background

To review briefly, the present application is directed to a selectively variable LED light source or lamp, e.g., such as would be used in a spot light, flashlight, or other like lighting application. In particular, the variable characteristic of the output light optionally includes any one or more of its intensity, spread angle or spatial distribution pattern, or spectral composition. The lamp includes a plurality of LEDs, and desired output variations are selected via a controller that permits distinct sets of the LEDs to be selectively operated independently of each other. The distinct sets of LEDs preferably have associated therewith optical paths with different optical prescriptions. The optical prescription preferably acts on the light traveling through the respective path associated with the LED to achieve a desired manipulation. For example, a lens configuration within the optical path optionally achieves a desired focusing, spreading, or other light refractive or spatial distribution pattern manipulation which defines the optical prescription for that path. Similarly, tinted elements within the path are optionally used to spectrally define an optical prescription for a given path. Preferably, there are at least two different optical paths having different optical prescriptions.

In this manner, by selectively energizing distinct LEDs or distinct sets of LEDs independently of one another, the light output thereby traverses the optical path or sets of paths having a particular optical prescription or sets of prescriptions associated therewith. Accordingly, to the extent that the associated optical prescriptions are different, changing which LEDs are energized varies the characteristic of the overall light output, e.g., in intensity, beam spread, spatial distribution pattern, spectral composition, etc. In some embodiments, only a single sub-set of the LEDs is energized at time. The output is then a result of that sub-set's associated optical prescription. Alternately, multiple sub-sets may be energized simultaneously to achieve an output which is a resulting blend of their respective optical prescriptions.

The Present Claims Distinguish
Patentably over the References of Record

Claim 1 is directed to a lamp with a light output that is selectively variable. It includes first and second lighting units having corresponding first and second lens elements with different optical prescriptions. A controller is provided for selectively supplying LED-energizing power to the first and second lighting units independently of one another to thereby control at least one of the intensity, spectral composition, and spatial distribution of the light output from the lamp. None of the applied references, either alone or in combination, expressly teach or fairly suggest the invention as claimed.

More specifically, Ryan is directed to an optical cell **10** having a plurality of LEDs **12a, 12b, ...** . Each LED **12** has its own lens potion **22a, 22b, ...** . However, nowhere is it expressly disclosed or even suggested that optical prescriptions of the lens potions be different from LED to LED. On the contrary, the lens portions are the same for each LED in the cell **10**.

In Ryan's disclosed device, the light output from any given cell **10** is always the same, i.e., it cannot be varied in any manner. This is in further contrast to the claimed lamp which has a selectively variable light output. Additionally, Ryan does not teach the claimed controller. Ryan nowhere suggests a controller for independently controlling the LEDs **12** such that selected ones thereof are supplied with energizing power to thereby control intensity, spectral composition, or spatial distribution of the light output from the

cell **10**. Conversely, Ryan suggests, if anything, operating all the LEDs **12** in a cell **10** jointly or together such that they are either all on or all off.

Begemann also does not teach the claimed controller. Rather, Begemann is directed to a luminaire **201** having a plurality of lighting modules **202** each including a plurality of LED lighting units **220**. However, there is no express teaching or suggestion that the modules **202** or the lighting units **220** are operated independently of one another. On the contrary, they are all operated in conjunction to collectively illuminate a particular object, namely, a road. The light output of the luminaire **201** (or any one of its lighting modules **202**) is unchanging or invariable, as opposed to the claimed selectively variable light output of the claim 1 lamp.

Importantly, both Mouyard and Handschy are directed to displays (the aim of which is to convey information), not lamps (the aim of which is to provide illumination). In any event, neither Mouyard nor Handschy teach the claimed invention. Neither shows claimed first and second lens elements with different optical prescriptions; neither shows the claimed controller; and, neither shows a lamp with a selectively variable light output.

Accordingly, it is submitted that **claim 1**, and **claims 3-6** that depend therefrom, distinguish patentably over the references of record.

Claim 7 is directed to a light having a selectively variable light output. The light includes a substrate; and a plurality of light sources arranged on the substrate. Each light source has a light emitting diode (LED), and an optical path in operative communication therewith. The optical paths have defined optical prescriptions selected from a plurality thereof such that at least two different optical prescriptions are selected. Distinct sets of said plurality of light sources are selectively operable independently of one another to produce from the light a selected variation of light output.

Again, none of the applied references, either alone or in combination, expressly teach or fairly suggest the invention as claimed. With respect to the display and/or illuminated signage references, neither Ryan nor Mouyard nor Handschy teach optical paths having at least two different defined optical prescriptions. Note that in each of the respective references, the optical paths for each LED all have the same optical prescription. None of these reference show that distinct sets of LEDs are operable independently of one another to

produce a selected variation of light output. Additionally, Begemann also fails to teach the claimed invention. Nowhere does Begemann expressly disclose or impliedly suggest independent operation of a plurality of light source to produce selected variations in light output.

Accordingly, it is submitted that **claim 7**, and **claims 9-14** that depend therefrom, distinguish patentably over the references of record.

Claim 15 is directed to a method of varying light patterns produced by the LED light source including a plurality of LEDs disposed on a substrate. The method includes: a) selecting a first set of LED from the plurality of LEDs; b) powering the first set of LEDs such that they emit light; c) passing the light emitted by the first set of LEDs through a first set of optical paths having a first set of optical prescriptions; d) selecting a second set of LEDs from the plurality of LEDs; e) powering the second set of LEDs such that they emit light; and f) passing the light emitted by the second set of LEDs through a second set of optical paths having a second set of optical prescriptions. As claimed, the second set of optical prescriptions is different from the first set of optical prescriptions, and the light pattern produced by the LED light source as a result of steps (d)-(f) is different from the light pattern produced by the LED light source as a result of steps (a)-(c).

Still, none of the applied references, either alone or in combination, expressly teach or fairly suggest the invention as claimed. Ryan, Mouyard and Handschy do not teach first and second optical paths having different optical prescriptions, and none of the references teach that the light pattern produced by the LED light source as a result of steps (d)-(f) is different from the light pattern produced by the LED light source as a result of steps (a)-(c). In particular, note that the illumination produced by the luminaire **201** and/or the lighting modules **202** is unchanging.

Accordingly, it is submitted that **claim 15**, and **claims 16** and **17** that depend therefrom, distinguish patentably over the references of record.

Claims 2 and **8** have been canceled. Consequently, any objections and/or rejections related thereto are now moot.

CONCLUSION

For the reasons set forth above, it is submitted that the present claims distinguish patentably and over the references of record. Accordingly, an early indication of allowance is earnestly solicited.

Telephone Interview

In the interests of advancing this application to issue and compact prosecution, the Applicant respectfully requests that the Examiner telephone the undersigned to discuss any of the foregoing with which there may be some controversy or confusion or to make any suggestions that the Examiner may have to place the case in condition for allowance.

Respectfully submitted,
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Attachment(s): Version with Markings to Show Changes Made

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

Claims 2 and 8 have been canceled.

The claims have been amended as follows:

1. (Amended) A lamp with a light output that is selectively variable in at least one of intensity, spectral composition, and spatial distribution, said lamp comprising:

a substrate;

a first lighting unit comprising:

a first light emitting diode (LED) arranged on the substrate, and

a first lens element having a first optical prescription, said first lens element ~~and~~ being arranged to interact with light produced by the first LED; ~~and~~

a second lighting unit comprising:

a second light emitting diode (LED) arranged on the substrate, and

a second lens element having a second optical prescription different from the first optical prescription, said second lens element ~~and~~ being arranged to interact with light produced by the second LED; and,

a controller for selectively supplying LED-energizing power to the first and second lighting units independently of one another to thereby control at least one of the intensity, spectral composition, and spatial distribution of the light output from the lamp.

3. (Amended) The lamp as set forth in claim 1, wherein the lamp has a plurality of operational modes selectable via the controller, said ~~further comprising:~~

~~a control unit having at least two selectable~~ plurality of operational modes including:

a first ~~selectable~~ operational mode in which LED-energizing power is ~~applied~~ supplied to the first lighting unit and not the second lighting unit, and

a second ~~selectable~~ operational mode in which LED-energizing power is ~~applied~~ supplied to the second lighting unit and not the first lighting unit.

4. (Amended) The lamp as set forth in claim 3, wherein the ~~control unit~~ plurality of operational modes further ~~has~~includes:

a third ~~selectable~~ operational mode in which LED-energizing power is ~~applied~~ supplied to both the first lighting unit and ~~to~~ the second lighting unit.

5. (Amended) The lamp as set forth in claim 1, wherein:

light ~~emission~~ emitted from the first LED has a first spectral ~~distribution~~composition; and

light ~~emission~~ emitted from the second LED has a second spectral ~~distribution~~ composition ~~that is~~ different from the first spectral ~~distribution~~composition.

6. (Amended) The lamp as set forth in claim 1, wherein:

at least one of the first ~~lens element~~ and ~~the~~ second lens ~~element~~elements ~~includes~~ has a tinted region ~~whereby~~ that alters a ~~the~~ spectral ~~distribution~~ composition of ~~the~~ light ~~emission~~ emitted from ~~of~~ the ~~at least one~~ lighting unit ~~that includes~~ including the tinted region ~~is altered in a pre-selected manner by the tinted region~~.

7. (Amended) A light ~~source~~ having a ~~selectable~~ selectively variable light output, the light ~~source~~ comprising:

a substrate; and

a plurality of ~~optical~~ light sources arranged on the substrate, each ~~optical~~ light source including:

a light emitting diode (LED), and

an optical ~~element~~ path in operative communication with the ~~light emitting diode~~LED, said optical path ~~and~~ having a ~~pre~~-defined optical prescription selected from a plurality thereof such that at least two different optical prescriptions are selected;~~,~~

wherein distinct sets of said plurality of ~~optical~~ light sources ~~being~~ are selectively operable independently of one another to produce ~~light having~~ from the light a selected variation of light output ~~characteristics~~.

9. (Amended) The light ~~source~~ as set forth in claim 7, wherein the selected variation of light output is selected from a plurality of different ~~light output characteristics include selected~~ spatial ~~light output~~ distribution patterns which the light is capable of producing.

10. (Amended) The light ~~source~~ as set forth in claim 7, wherein the selected variation of light output is selected from a plurality of different ~~light output characteristics include selected~~ angular distributions which the light is capable of producing~~of the emitted light~~.

11. (Amended) The light ~~source~~ as set forth in claim ~~10~~7, wherein the selected variation of light output is selected from a plurality of different ~~light output characteristics include selected light~~ colors which the light is capable of producing.

12. (Amended) The light ~~source~~ as set forth in claim 7, further comprising:

a control unit that controls ~~operates~~ operation of the distinct sets of said plurality of ~~selected optical~~ light sources to ~~producing~~ produce a desired spatial and angular distribution of the light ~~source~~ output.

13. (Amended) The light source as set forth in claim 12, wherein the control unit ~~further~~ includes:

electrical circuitry that ~~conditions~~ regulates ~~the~~ power ~~applied~~ application to ~~at least one of~~ the ~~first optical source and the second optical source~~ LEDs.

14. (Amended) The light ~~source~~ as set forth in claim 7, wherein:

~~the~~ each optical ~~element~~ path includes a ~~first~~ lens element formed according to the ~~pre~~-defined optical prescription therefor.

15. (Amended) In ~~an~~ a light emitting diode (LED) light source comprising a plurality of ~~light emitting diodes~~LEDs disposed on a substrate ~~each in optical communication with a lens~~, a method of varying light patterns produced by the LED light source, said method comprising:

(a) selecting a first set of LED from the plurality of ~~light emitting diodes~~LEDs;

(b) powering ~~light emitting diodes in~~ the first set of ~~light emitting diodes~~LEDs such that they emit light;

(c) passing the light emitted by ~~each of the powered light emitting diodes in~~ the first set of LEDs through a first set of optical paths having a first set of optical prescriptions~~lenses integral with each of the powered light emitting diodes in the first set producing a first angular distribution of light~~;

(d) selecting a second set of LEDs from the plurality of ~~light emitting diodes~~LEDs;

(e) powering ~~light emitting diodes in~~ the second set of ~~light emitting diodes~~LEDs such that they emit light; and

(f) passing the light emitted by ~~each of the powered light emitting diodes in~~ the second set of LEDs through a second set of optical paths having a second set of optical prescriptions, said second set of optical prescriptions being different from the first set of optical prescriptions~~lenses integral with each of the powered light emitting diodes in the second set producing a different angular distribution of light~~;

wherein the light pattern produced by the LED light source as a result of steps (d)-(f) is different from the light pattern produced by the LED light source as a result of steps (a)-(c).

16. (Amended) The method as set forth in claim 15, further comprising depowering at least selected ~~light emitting diodes~~LEDs in the first set prior to powering the ~~light emitting diodes~~LEDs in the second set.

17. (Amended) The method as set forth in claim 15, further comprising altering a wavelength associated with the different angular distribution of light such that ~~the different~~ a second angular distribution of light comprises a color different than ~~the~~ a first angular distribution of light.